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Topic coverage defines the interaction and relationships between school officials and professionals in the fields of design and planning. Preliminary discussion involves school function and educational planning, while the topic of architect choice considers--(1) professional role, (2) basic factual data, (3) selection methods, and (4) contracts and external parties. Information needed by the designed is discussed in terms of--(1) educational specifications, (2) school planning guides, and (3) programs and restrictions. The role of the architect is lastly defined in terms of--(1) owner relationship, (2) basic services, (3) fees, (4) special services, and (5) the completed school. A standard agreement form is included. (MH)

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- Selection
- Duties
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The School Architect

Selection · Duties
How to Work with Him

By

Marvin R.A. Johnson, FAIA

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Why This Book

School officials are very busy. Never before have so many things happened in education at the same time.

The world is in effect smaller. This makes it necessary for its citizens to have a better understanding of all people, themselves and others--their nature, their history, their values, their aspirations. The pace of scientific and technological change is accelerating; this requires citizens with higher levels of education. Social change in America is revolutionary; this means that educational agencies must remodel their customary attitudes and processes. Citizens demand more public services; this forces educators to share public money with an increasing number of services and agencies. The influx to cities leaves many schools in the wrong places. Urbanizing communities need to build more schools, while the rural regions have empty schoolhouses. The neglect of schools in the center city now calls for unconventional and massive improvement of educational services, including buildings and related facilities.

Public school officials--boards of education and their administrative personnel--have to take on added responsibilities to make certain that the new schools they must build are suitable for the present and for the new and unimagined needs. To be of help in this challenge, this book deals with one aspect of the task of these school officials: the interaction and the relationships between the school officials and the professionals in the field of design and planning.

In this time of change, it is hard to write something that will not be immediately obsolete. This book has one foot in how things are; one foot in the direction of how things might be going. It is written in terms that hopefully can be applied to all sections of the nation, with full recognition that the local situation will demand adaptations and variations on the theme. There are some consistent patterns that now prevail in school organization and architectural practice; it is these patterns, along with some reasonably basic principles of educational policies which govern the preparation of this book.

What a School Is For

People--that is what schools are all about.

Schools are for people--young people mostly. The well-being of the students, the teachers, the staff, and the public--their needs as human beings--these underlie the principles on which school facilities must be built. School facilities are means to an end; and that end, that goal, is the education of students.

Facilities (the buildings, the grounds, the equipment and furnishings)--along with people (the students, the teachers, the staff, and the public) and the "things" or tools of education (books and other mediating materials and devices)--are all means of attaining the goal of the best development of the citizens. Facilities provide the place, the locale, and some of the tools for education.

At best, and ideally, school facilities should help the students, teachers, and others who serve them. At the least, facilities should be neutral; if they do not help, neither should they hinder.

School facilities should not get in the way of the pupils and teachers in their work and activities. They should be appropriate, well-arranged, pleasing and complete. They should furnish a place where students and teachers are reasonably comfortable and content, where they like to go and to work.

If school officials keep these principles in mind, they are not likely to make big mistakes in planning school facilities. Now, it is true that the tender feelings of other people must be given some consideration: the easily offended taxpayer, the sensitive tax-levying authorities, and the diligent but often distraught school administrators, all of whom have responsibilities for making decisions regarding educational services. But it remains that the schools are mainly for the students and for those who work with them. Their needs and interests should be uppermost in all planning for school construction.

Schools and education

Schooling is of itself not education. It is possible, though difficult, to become educated without schooling. Schools are a part of an institution which has as its purpose making education more effective and more efficient. Schools

have been established to provide an organized system for concentrating those activities and processes which seem to reduce waste in the intellectual development of the citizens.

It has been customary to put the emphasis of education on the young children. Schooling begins with small children when they are old enough to be reasonably able to take care of themselves and to be ready to read, write, and work with numbers. The length of time, the number of years (unaccountably usually divisible by four) during which an individual stays with this organized schooling has continually been increasing, until now being without a college education (16 years in the system) is oftimes equated with condemnation to social inadequacy and economic failure.

At the same time that this stretching out of school attendance has been taking place, modern science and technology have been developing newer, faster, and more effective media of communication and means of transport. Modern science and technology are now exerting a stronger influence on the educational process, one that parallels and may surpass in importance the effects of our schools.

This new competition for established education services—our schools and colleges—comes from television, inexpensive books and periodicals, the transistor radio, recording devices, commercial motion pictures, great opportunities for travel, and increasing interaction among people as they move about in concentrated population complexes.

There also exists, especially in the more densely populated urbanizing communities, a combination of resources and services that affect the development and growth of the citizens—museums and other cultural centers, commercial enterprises, recreation and entertainment programs, a host of public and private services and agencies, some of which are operating educational and training programs in seeming competition with the public educational establishment.

The educational establishment must recognize that it is now only a partner in the processes of education—it is no longer the monopoly it once assumed it was. If the educational establishment is not alert, if it fails to accelerate its rate of change, it may actually become only a junior partner in terms of the effectiveness it has on attitude-forming and intellectual change in young citizens.

On the other hand, if the educational establishment recognizes the changes taking place in the educational environment, then wise officials in charge of the nation's schools and colleges will not only set about greatly improving school-provided services. They will also accept the beneficial influence of the competing institutions and will endeavor to mesh the school's services with all the other community agencies that have a role in the complex processes for advancing human development and intellectual and cultural growth.

The changing school

Planning and building a school used to be a clear-cut proposition. A school then was a self-contained entity. It consisted of a piece of ground (fairly small), with one or more buildings on it, plus some space for "playground" or athletic fields, and a front lawn around them. Almost everything "educational" went on right there.

To plan such a school involved rather simple, definite, and limited factors--classrooms and laboratories along corridors, an office, an auditorium, a playroom or gymnasium, shops for high schools, heating rooms and other necessaries. For the most part, planning and building such a school involved simple, standard materials and conventional architectural styles.

But now, this is changing more and more. A school must now be a part of a complex system for education. A school can perhaps be defined so: it is a coordinated combination of resources, human and material, in a setting that optimizes their use for the benefit and development of the students. With modern means of communication and transportation, these resources are no longer mainly situated in the schoolhouse and on its grounds. Today the community, the city, the nation, and the world can become a part of the school.

The school can be more than the center for traditional "educational" activities. In fact, in many areas and communities, the school is becoming an integral part of the neighborhood and community in which it is situated. Classrooms are being used longer hours; and libraries, laboratories, assembly halls, communications services, and classrooms too are made available during "non-school" hours and days. Indoor and outdoor facilities and accommodations, traditionally planned and incorporated in the school for physical education,

athletics, and other "school" purposes, are now being planned so that they can be utilized more extensively for recreation and part services.

The schools of tomorrow will be closely related to community parks and recreation areas. And, by location, they will be part of, or convenient to, transportation and communication services, health and medical services, human rehabilitation and welfare services, industrial and commercial enterprises, cultural and other educational centers.

Already some school districts, especially in large cities, are planning schools in connection with, and as a part of, building complexes that include space for a variety of other uses. Plans, some of them already on the drawing board, call for construction in which schools, apartments, business establishments, and offices may all be located in the same building or set of buildings.

Planning and utilizing space in a multi-purpose building or complex for a "school" will offer the school administrator new challenges and involve him in new problems. He will, of necessity, deal directly with a variety of organizations, agencies, and enterprises. His job will not be an easy one. To get such a facility planned, built, and placed in operation, many and diverse segments of the business and government world will have to work together; and this will involve an enormous amount of interaction, red tape, and formal agreement. Also involved will be transportation services, communications systems, management arrangements, financial sortings-out, and reassignment of responsibilities and liabilities.

It is likely that this will place also a new burden on the architect, because, in many instances, he is the entity most likely to coordinate all these various segments. But it is also possible that new public or private corporate entities will arise to serve this coordinating function.

How to Decide What to Plan and Build

Constitutions of the nation and the states may permit, encourage, or require that education be available to the citizens. In consonance with these constitutions, laws authorize educational enterprises and establish organizational structures for these enterprises.

Customarily the basic pattern is for a group of citizens, or a board, to be established and given the responsibility to provide the means so that education can be readily available to the people in a specified geographical area. The general mandate for such a board is that it determine the goals and purposes of education, develop policies for achieving these goals, and appraise continually the success of these policies. Of the board's most important activities, one relates to the communications with the citizens for whose education it is responsible, while another has to do with the selection of its executive officer, the superintendent of schools.

Educational planning

Since the topic of this book is the role of the architect and his relations with the board of education, only limited space and time is given to the procedures that boards of education use to assess educational needs. In establishing its goals, the board of education appraises the human needs of the citizens it serves. The board then determines what are its responsibilities toward fulfilling these needs.

When it determines its responsibilities, the board must be fully aware of the roles that other segments of the social and business structure are assuming--or should be assuming--to meet the challenge of human betterment. These segments include the private sector (business, industry, and the professions); agencies or institutions providing medical, rehabilitation, welfare, recreation, and cultural services; and all the rest.

The board of education does not function in isolation. It shares a portion of a vast activity for human betterment. The board must be clear on what it will assume, what it will leave to others, and how it will relate itself to, and interact with, these many other services and enterprises.

In determining its policies and its course for action, the board of education asks itself questions such as these:

- Whom does the educational enterprise serve in the intellectual and social development of the citizenry? Elementary and secondary school pupils only, "post high school" youth in community colleges, the very young (the pre-school children), adults, the specially handicapped?
- What are the responsibilities for occupational training and education?
- What services does it provide in physical and mental health, rehabilitation, recreation?
- What are its staffing patterns in the schools and in the administrative and management organization?
- What services does it provide for the training of teachers and other staff members?
- How will its program be financed?
- What are the needs for transportation, communications, food services?
- What buildings and other facilities will it require?
- How extensive are its operations and maintenance programs?
- How and when will the services of the educational establishment be evaluated?

In settling the specifics of its goals, the board must have gathered information about facts and features of the region and the people it serves on topics such as these:

- Geography and history
- Population
- Employment
- Commerce, industry and trade
- Finance: the economy
- Government
- Public services
- Social institutions
- Transportation-communications
- Cultural resources
- Educational services and facilities at all levels

Self study and survey

One of the instruments that the board develops to carry out its services is the combination of educational facilities--buildings, grounds and equipment.

These educational facilities in the board's charge must be viewed in the context of the entire educational enterprise. This will require a study and evaluation that can take place in several ways:

- The local educational system looks at itself, appraises its goals, its services and its results.
- The local education agency secures an independent and objective consultant service to survey the schools, the instructional program, other services, organization, enrollment patterns, facilities and other resources, personnel, finance.

The independent survey and consultative service has obvious advantages. The consultants are "above" local politics, they are not on the defensive, they can speak their mind, they are aware of developing improvements in educational processes and technology, they are conscious of what is taking place beyond the limits of the local board's responsibilities. Their services are advisory.

Whence such consultant services? There are several sources. Some states have educational agencies with staff members to do this. There are institutions of higher education with special agencies, personnel, or services in this field. Then there is an increasing number of professional private consultant firms with a great variety and range of services including education, management, organization, systems analysis, and finance. Professional planning firms (including architects) employ specialists in the fields of management and finance, sociology, economics, psychology, political science.

A comprehensive and thorough-going study and survey takes time and talent, and therefore money. Even if a public agency does the survey work, there will be costs to the local educational agency. Local personnel must take time (1) to confer with citizens' groups and representatives of local community services and agencies, (2) to develop pertinent information and data for the surveying agency's use, and (3) to confer with consultants.

Obviously, the local education agency ought to have for its own use the kinds of information and data needed for a study or survey done by consultants. Once assembled, this information resource can be maintained and enlarged by the local system for continued use. It is time for more school systems to use the modern technologies of data storage and retrieval machinery and computer capabilities in this information service.

Any self study and independent survey should not be satisfied with the status quo. Not even the best school systems are good enough. Goals should be high; new standards set; thoroughly modern educational methods, processes, devices and technologies should be investigated. Existing organizational patterns should not be inflexible and not accepted as final.

Education is a continuing enterprise. Once set up, it has no set date for going out of business; it goes on indefinitely. Education therefore has a future; hence it is necessary to plan accordingly. Educational planning is an on-going activity of the board and its executive and staff—it is this continuing process of determining educational goals, devising and carrying out the means to achieve them, then continually evaluating results.

When the time comes to plan and build new facilities or to renew existing ones, the local board and staff will need the services of many professionals in the field of design, including architects, engineers, landscape architects, and consultants.

Who are these people—what do they do?
Who selects them?
How are they selected?
Who tells them about what to plan?
What services do they provide?
How much do they get paid?

These topics are taken up in the remainder of this book.

The Architect and How to Choose Him

Should the school officials hire an architect? The law probably says yes. The law says so because of society's concern for safety--buildings are to be designed by people who know what it takes to make a building acceptably safe and reasonably sanitary for the occupants. This is especially important for buildings intended for public use. It is doubly so for buildings used by those who do not have much choice in whether or not they go there, such as prisons, hospitals--and schools. This safety is important also for buildings which invite, encourage, and entice people to come in, such as recreation and cultural centers, stores, churches, factories, office buildings.

So, in the interest of public safety, states enact laws which insist that schools be designed by competent trained planners and designers. Architects and engineers are so trained. Then states set up procedures by which such trained and experienced designers can become registered as certificated professionals, qualified to practice.

The architect as a coordinator

Planning contemporary buildings requires the talents and training of a variety of professionals, including architects, engineers, landscape architects, and consultants in equipment and communications. Professional site planners and landscape architects may be needed to site buildings properly, to study traffic problems, and to provide for drainage, grading, molding the terrain, preparing turf, planning and planting trees. The bones of the building—the structural system—must be designed by someone who knows how. The mechanical system—heating, cooling, humidity control, piping for fluids such as water, gas, air, oil, for waste disposal—becomes increasingly complex.

Illumination is more than engineering; it is an art to design with lighting. And not every architect is fully competent in the fine art and science of acoustical design; he may need a consultant to help. Specialists may be need to plan communications systems for new media in audio and visual techniques: television, computer utilization, and to design equipment for learning purposes in science and mechanics, and for food services.

Increasingly, architects are working with specialized professionals in the social and behavioral sciences. They may call on anthropologists and psychologists for counsel on matters relating to man's response to his physical surroundings, and on sociologists for guidance relative to man's interaction with other people and how this is affected by physical environment. These specialists in the social and behavioral sciences are also useful in suggesting and evaluating educational processes.

Since all these factors of structure, environmental control, and new techniques of construction become an integral part of new schools, these factors cannot be left out of preliminary consideration for a new building. Specialists in these fields may well be brought into action early in the building design process.

The architect, whose training has dealt to some degree with all these factors, normally, without being a specialist in all areas, serves as coordinator for all these design services. Does he select the professionals providing those services?

His firm may well include personnel competent in the needed areas. If not, the architect usually selects them. If the owner wishes to choose engineers and consultants, he should be sure that they are on good terms with the architectural firm. There is no point in adding chances for friction and disharmony.

The interrelationships among the design professionals, the scientists, and the school officials need to clearly understood. Sooner or later, a multitude of firm decisions will be made about their common concerns; it is good to be clear about who makes what decisions.

Some commonsense considerations

Since the school officials need an architect, they should make their selection with great care.

The local man. The architect does not have to be home folks—perhaps the man with a cousin on the school board. The "I'm a taxpayer" bit from the local architect does not count for much. Most architects are not so well off that their tax bill is very impressive, except to them. The nation's communication and transportation systems, imperfect as they are, still make it feasible for an

architect to work over a large geographic area. If the architect is very good, the chances are that he has clients away from home. Geography, then, is not the main criterion to start with when selecting architects.

Of course, there is no harm in hiring one of the local architects; on the contrary, it has advantages. He is near at hand. This will save on long-distance calls and travel, and the school officials can look over his shoulder once in a while. Also, the local firm is likely to have a special and personal interest in the community and may put out extra effort for neighbors and friends.

Experience in designing schools. Many of the best schools in the nation have been designed by architectural firms that have many fine schools and years of experience to their credit. But the architect who is "merely experienced" may be a "know-it-all." He may be less open-minded, less amenable to new ideas. Just as some school officials after twenty years of service don't have twenty years' experience but have one year's experience twenty times, so an architect may not have designed twenty schools but only designed one school twenty times. Such an architect is almost certain to design a school that is obsolete before it is built. In these days of rapid change, that won't do. Though it would be absurd to disregard experience, experience alone is not important enough in itself to swing a board's votes.

Size of the firm. The school administration should not hesitate to inquire about the firm's organization, its experience, and personnel. The inquiries should be directed to finding out if the prospective architect's firm is adequate to take care of all matters that need to be attended to--at the proper time.

What about the firm just organized? It may be small and not yet capable of taking on a million dollar project. However, its principals, with their eagerness to do first-class work in order to establish a sound reputation, may do very well on a smaller job. They will have had some experience; otherwise they could not have opened their own office. As each member of the board and superintendent approaches with caution in employing a newly established firm, he can remind himself that he too once held his first big job or commission.

Maybe a small firm will agree to an association with a larger firm, in which case two firms join forces to come up with a sizable and balanced firm. But such an association should be a willing match, not a forced marriage of

unequals and incompatibles. The association idea can also be used with a local and a distant firm, a situation to which the same cautions apply.

There are other possibilities. The brilliant individual and independent designer may be available—an architect who may not wish to commit himself to a single firm nor want to bear the burdens of managing his own. He will have access to the necessary array of services in engineering and in production of documents. Such arrangements have possibilities for exceptional results, but may involve problems for the school officials.

Capacity, the capability to do the necessary work well in a reasonable time schedule, is more important than mere size.

The fee. Boards expect to pay the architect. However, an inexperienced board member, faced with what he considers a seemingly large architect's fee, may suggest shopping for a lower one. But this is not a bidding process like the one used later in the game to select the building contractors. Usually within a geographic region there is an established pattern for the amount of the architect's fees. The difference between the ethically established fee and a lower fee is very small when compared to the total cost of the building project. There is not much point in selecting an architect on the basis of this item.

Selection methods

Direct selection. In many school districts, the board chooses the architect outright. If the board uses this method, it hires someone it has employed before, or someone it has heard about or had recommended. Some boards employ the same firm or firms, over and over again. When a board uses more than one firm, the decision about which to utilize on a particular project may be made on a kind of "card game" approach, with one firm getting one project and another a different one. Though some firms feel that they get all the deuces while others get all the aces when boards use this selection method, there is nothing wrong with the "direct selection" method if good and competent firms are chosen to plan first-quality schools.

Design Competition Method. One way to select an architect is rarely used for schools. That is the Design Competition Method. It is sometimes used for

large projects, monuments, or public buildings. It is rather complicated, takes extra time, and usually costs more money.

To reduce the many problems of this method, some rules have been agreed on; these can be obtained from the national headquarters of The American Institute of Architects.[1] Simply stated, architects are invited to submit their solutions for a design project that is clearly described in the official program for the competition. A jury of competent people is chosen to judge these submissions and to select a winner. The winner is then awarded the commission and continues with the development of the plans for eventual construction of the project.

Comparative Selection Method. A third way is the Comparative Selection Method. This can be used by school officials who have no "regular" architect or architects, or who want to consider some new talent. The board will consider a number of firms and will ask each of these firms to present its qualifications in writing or in person—or more often, both ways.

The board is free to ask what it wants to, the board that wants to ask what is appropriate and most useful would do well to use a form similar to the "Standard Form of Questionnaire for the Selection of Architects for School Building Projects." This form was jointly produced in 1963, and the text was jointly owned by the American Institute of Architects and the National Council on Schoolhouse Construction (now the Council of Educational Facility Planners, a name which gives a better idea of the purpose of the organization). The form, currently being revised, furnishes information to the architect about the school system and also tells the school officials about the architectural firm.[2] After this information has been exchanged, there should a conversation—a friendly one, not an inquisition.

The list of architects to be interviewed when this selection method is used need not be very long if some pruning is done first. The board should not invite every firm within a given number of miles—only the serious candidates. The

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[1]The AIA's address is 1735 New York Avenue, N.W., Washington, D.C. 20006.

[2]Copies of the revised form will be available in the autumn of 1968. They may be obtained from either organization. The address of the Council of Educational Facility Planners is 29 West Woodruff Avenue, Columbus, Ohio, 43210.

interviews should be long enough to be fair to everybody, and they should be planned with due regard to courtesy. The board that lines up a dozen firms for a two-hour session, giving each firm about ten minutes, while the principals from the others sit in a waiting room making awkward small talk, is certain to get little information and possibly a lot of wrong answers.

The conversations ought to be cordial, concise, and informative. The topics could be the same as those listed on the questionnaire form, including these: the nature and scope of the building project, time schedules, the architect's organization, his present workload, completed projects, the school system, and a mutual commitment to cooperation. Both parties should tell about themselves.

Architects handle these interviews in a variety of ways. Some firms will have a well organized, visually documented presentation with a public-relations manner. There is certainly nothing wrong with this, but boards should not be dazzled by the presentation; they had better look at the content also. Or a firm may wish to impress with its history of low-cost construction; then the board should look closely at the quality of its buildings and at what is included in these cost reports.

Boards should not expect the architect to produce a sketch for their new school for this first meeting. If the architect volunteers this for the interview, the board had best forget him as a candidate. To design a school on the basis of the information the architect has at this point suggests a lack of understanding of what planning is all about. It takes much time to analyze the client's needs and to synthesize all the factors into a building design.

Consulting other clients and contractors

If the school officials are thinking about hiring a firm they have not dealt with before, it is entirely proper for them to do some checking up on the firms they are considering. They can look at projects the architects have done before; even a brand new firm has people in it who have had responsibilities for building while working for someone else. They can find out about costs and about meeting reasonable budgets. One client's evaluation is not enough; even the best architect may have a disgruntled client. Contractors can be consulted, but their words

have to be evaluated carefully. A good architect is reasonably severe to assure that the builder does what he is supposed to, and a reputable contractor expects that along with consistency and fairness.

The agreement

When school officials find an architect whose buildings they admire, whose abilities they respect highly, with whom they can agreeably communicate, then it is time to formalize the arrangement. It should be accepted at the outset that both parties have the same goal in mind--to plan and to build the most acceptable, useful, and architecturally significant accommodations for the people who will occupy them. School officials and architects with their consultants are partners, not master and servant. The school board does not merely direct; the architect does not do everything the owner says.

The relationship between the owner and the architect is a sound business proposition. The agreement between them ought to be a formal, forthright, and honest arrangement--in writing. It should be handled like a business compact with a special touch. Although there exists a professional and cordial understanding between many boards and their architects, a clearly spelled-out statement of responsibilities is likely to keep this so. Boards consist of several members, some new, some long-term; school superintendents change jobs; architect and engineer firms are sometimes rather large. With so many people involved a written agreement is essential to avoid misunderstandings and to help clear up those that may, and often do, occur.

Prior to signing the agreement, the individuals involved should review it--to apprise all concerned about the relationships they are establishing. The owner needs to understand the arrangements for services of the many specialists who may be involved, including engineers, consultants, professionals in the physical, social, and behavioral sciences. A later section of this study is devoted largely to the agreement between the board (owner) and architect (see pp.27 -47).

Information Needed by the Designer

To design a school today calls for a fresh eye, a clean approach. Since schools are usually planned as if everyone knew how; it might be useful for school officials to take an attitude of not knowing, and to think through the whole business every now and then. That is one of the advantages of going through the process of preparing educational specifications for almost every project. Everyone involved is put in the position of having to defend what has been done in the past and to challenge present practices in education and in building.

Educational specifications

The term educational specifications is fairly new for most people. Actually it has been around for a while and now has come into common usage. But already many educators and educational planners are dissatisfied with it.

One objection stems from the word specifications, and persons who raise this objection feel that the word is ambiguous, because it is already applied (and has been for a long time) to the written part of the architect's and engineer's communication to the builder. (Together with the plans, these architectural-engineering specifications tell the contractor what and how to build.)

Besides this likelihood of misunderstanding, inherent in the meaning of the term specifications is the implication of "specific." Educational specifications are not specific, not that precise.

Some people suggest a substitute term--educational requirements. This does not help much. The document hopefully should be full of ideas and provocative suggestions and possibilities. It may even include some contradictions that are to be resolved as the planning process continues. It should refer to possibilities that are neither required nor specific.

Be that as it may, the term educational specifications, often abbreviated as ed specs, seems to have a firm place in the vocabulary and will be hard to get rid of.

A means of communication. The primary function of ed specs is communication from educators to designers. They are intended to convey to designers what the school officials want to plan and build.

At their best, however, they provide an opportunity for communications involving other segments of the school system and the community it serves. The planning of a new school can provide a good opportunity for self-evaluation of current educational practices, the procedure for which should involve administrative staff, teachers, and patrons of the school. The planning process affords school leaders a chance to discuss with their staff and teachers new ideas, to enlarge their in-service staff development program, to visit situations in other locations; it provides another channel to improve mutual understanding between school officials and teachers; it can set up situations for interchange of ideas among the several subject-matter and grade-level teachers that the usual faculty meeting may never get around to.

What ed specs contain. If well done, the educational specifications will state what the building is expected to do and what it is to be used for. They should not describe what it will look like, exactly how big it is to be, or what it will be built of. Some out-of-reach idealism is fine. Ed specs are not the final statement; they are just the first. Educational specifications contain at least these:

- The school board's basic principles and goals of education
- Information about the school district or about the area where the school will be built
- The type of school, initial and ultimate capacity, and other uses
- Activities to take place in the several parts and areas of the school facilities
- Personnel—students and faculty and staff—to be provided for
- Kinds of equipment and spaces required
- Desirable relationships among the parts of the facilities
- Estimates of instructional subjects, classes, schedules
- Relationships of buildings to grounds, surrounding buildings, land, community, and region
- Transportation and communications systems
- Utilities and other services

As examples, how precise should the information be? Should the owner tell the architect and engineer how much light there must be in the several kinds of rooms and laboratories? Should the architect be told where acoustical treatment is required? Does the school board prescribe the kind of energy or fuel to be used for heating and cooling? Can the school officials demand pink brick? The answer to each of these questions is "no." School people can express their opinions on these matters, but to dictate answers to them is not their business; these are primarily design decisions.

It would be much better if the architect knew how a room would be used. Then with his consultants, he ought to come up with the right answers about lighting. If the school plan shows a band room next to the library, then the architect better solve the acoustical problems. The decision whether coal, electricity, gas, water power be used to heat the building ought to come out of a joint agreement of owner, architect, engineer, and consultants. Choice of materials from which the buildings are built is mainly the architect's business; and he needs to consider harmony, appropriateness, availability and costs.

The ed specs document should stick to stating principles and relationships, describing activities, and making recommendations. Statements of what is needed should not be so detailed that they dictate the planning. It is hazardous to good design for a committee of educators to dictate plan layouts by furnishing precise floor plan drawings for the architects to follow. Educators may well be overlooking designs far better than the ones they propose. Although plan diagrams may help to communicate ideas, the plan-drawing should be left to the professional designers.

It is entirely appropriate for the board to include in the ed spec document a verbal commitment to good architecture, to high quality design. Since this does not necessarily imply higher costs, such a statement may well provide another prod and stimulus to the architect to work harder to produce a school plant that is also a significant work of the architectural art. There is nothing sinful about a beautiful school, and there is nothing immoral about spending money on art works and plant materials.

To supplement the educational specifications, is it all right for the owner to tell the architect what he "likes?" Is it appropriate for a school official to tell

the designers that he likes this material and not that one, that he likes "X" brand of equipment but has had unhappy experiences with "Y" brand? Is it professional for the superintendent to tell the architect that he thinks the new school in the neighboring district designed by someone else is beautiful? Of course it is, if he does not insist too strongly. These comments help the architect and engineer to understand the clients better; there is no harm in that.

Who prepares ed specs? How do ed specs get started? That is the responsibility of school officials, who have the official duty to see that school facilities are provided, with the implied obligation to see that the schools are planned well and built appropriately. The school superintendent, as the executive officer of the board, ends up with the duty to see that this gets done. He can, probably ought to, and usually does, delegate someone else on his staff to take charge. It is very important that this person be carefully chosen, because he has a large role in planning new school facilities. Ed specs are usually no better than the leadership that prepares them. The board may wish to hire special consultants to lead or help in this.

Who should be involved in preparing educational specifications? About as many people as the school people can put up with. This means students, parents, other lay citizens, consultants, as well as teachers, principals, central school staff, technical and service personnel, and governmental agency representatives. What is advocated here will be better understood if elaborated upon a bit.

First, we do not say that all these people should participate in each school building project; but, that, at the right time in the continuing process of making decisions about school design, representatives of all these segments of the community should have a chance to voice ideas and attitudes or provide information.

Second, letting people have their "say" does not mean that they are going to have their "way." To pay too much attention to teachers who may not be too imaginative, who look back on the good old days that never were, is hardly wise. Nor is it sensible to heed the pet ideas of someone who may be somewhere else next year.

Involving so many people in preparing ed specs and planning places a serious responsibility on the school's leadership. The leader in charge needs a firm hand to keep the whole business under control. He should make it clear

before discussions begin that everyone can express his ideas, but there can be no promises that all will be fulfilled. He had better be frank with all participants that their contributions will be respected and weighed, but that he reserves the right to make decisions. If all this is not understood from the start, school officials may later be confronted with a host of dissatisfied, frustrated, and annoyed people who feel that their big ideas and pet theories have been trampled on, or worse, completely disregarded.

All this does not mean that the experience and special know-how of certain school personnel should not be sought when appropriate; for example, the maintenance and operation personnel. However, there are some good buildings that do not leak and are easy to keep clean, but they still are not very good schools; and it obviously would be a mistake to let the maintenance men set the standards for the schools. The fiscal officer can be helpful too, but he should not make decisions that belong to the educator and the architect. However, many school business officials have become highly competent and sensitive persons in the school facility planning business. In fact, in many school systems, school planning and construction is one of the responsibilities assigned the chief school business official, whose title may be assistant superintendent in charge of business affairs or business manager.

One way to stimulate local people working on ed specs is to involve special consultants, who can be most helpful. They should know about what is going on in education, as well as what ought to go on. Good consultants are up-to-date, imaginative, provocative; and they can provide local people with new information and new ideas and inventive proposals about finance, management, and about methods, systems, devices, and materials.

Should the architect participate in preparing ed specs? Not necessarily, but it is not a bad idea. The process of preparing them should not be delayed unduly, and can be started even before money is available to build. In that case, an architect may not yet have been chosen. However, there are likely to be advantages to involving him early. He can ask pertinent questions, give professional counsel, absorb the attitudes of the educators, and experience some of the same trips, conferences, inspections with the educators.

Can a good school be planned without formal written ed specs? It has happened, because some first-rate people were involved and because some other kind of communicative rapport happened. Some kind of information and idea exchange is obviously necessary, and it should be more than just a phone call from superintendent to architect, like this: "The board decided last night to hire your firm. We need a new elementary school, with fifteen—eighteen if we can stretch the money—multi-purpose rooms, offices, a library maybe. The next board meeting is in three weeks; think you can have some sketches for us to talk about by then?"

The architect deserves better than that. This leaves the architect several choices, none of them a happy one. He can improvise on that bit of information, he can imitate a previous building of similar nature, or he can set out being the inquisitor and through dedication and determination extract as best he can by interrogation what the project really entails. This is not fair to the architect and his engineers nor to the students who are the reason for the project.

School planning guides

Another school-produced document that has value for the designer may be the school system's planning guide. Some school systems prepare such guides and keep them up to date. Such guides include a variety of information on matters such as these.

- Procedures for taking bids
- General conditions of the contracts between owner and builders
- Recommendations regarding building materials and equipment
- Suggestions about special details and preferred brands
- Standards and minimum requirements for room sizes, layouts
- Preferences of plans for special areas and rooms

These guides are usually well intentioned devices to expedite the planning processes. They can prevent forgetting important details, and they help to avoid disparities in the quality of buildings in the same school system.

However, as they grow, these guides may exert a strong influence on school planners and designers. They can become a disadvantage and a drag on

the growth and progress of school planning. They tend to become compilations of quick formulas and standard plans and specifications or conventional details to be applied to all plans, to include short-cuts and simple answers to difficult problems, and to ignore the enormous range of human problems that may exist in the school district—problems that demand a wide variety of educational approaches and suggest or require widely different design solutions.

A school planning guide will be useful to the designer if its scope is limited and its impact on good design not repressive. As a summary in writing of a variety of experiences, such a guide can be a valuable source of ideas for the architect. However, if the guide includes floor plans for libraries (as some do), it would be well for all concerned to understand that the floor plan of the school to be built, including the library, is the architect's business.

Programing by architects

Ed specs are not the only way to assemble the information, data, and ideas needed to design a school building. Some designers do the programing. When the architect does the programing, the compilation or document is used instead of ed specs, but differs from them in that it is likely to contain less detail and information.

Some architects and educators have grave doubts about bringing a large number of people into the process of preparing the message for the professional designer. A considerable amount of time is involved, and there are other considerations. Is all this "getting together" of teachers and other staff members to happen on school time; and if not, do they get extra pay for nonreleased time they put in? How long will it take to get all the people involved together, to explain their roles, to have them discuss, to get their reports written and edited, to complete the ed specs, and to get them approved? Is it worth all the time and effort?

There are some architects, and good ones too, who prefer to do most of the programing themselves and to keep control of this information gathering and idea sharing. For them, the programing is part of the architect's services.

If the architect performs this service, he can guide the conferences of school people with professionals to make the best use of time. He can use more

sophisticated methods of interviewing and apply better techniques for understanding requirements and preferences. Such professional designers may also have capabilities for handling and organizing information so that it will be most useful for them during the design process. So there is not just one way for architects to secure the needed information, data, and ideas. The best method to use is determined by the various capabilities of the people involved.

"Restraints" on the architect's freedom

Besides the educational specifications or other message about educational needs, there are other "givens" or "restraints" that moderate the architect's freedom to design or modify the possibilities. Though the matters discussed in the next few paragraphs concern designers more than educators, the board of education and superintendent will profit from a general understanding that can help to smooth owner-designer relations.

One of these factors the architect must consider is the site and its special characteristics: location, topography, plant life, orientation, traffic ways, climate, and direction from which the sun shines. The architect can counter these restrictions with earth movers which are continually becoming more efficient, more massive, and more voracious; he can use new techniques in lighting, heating, and cooling to make natural climatic factors less dominant. Yet these realities of the site must be considered, for they are a part of the program, part of what the architect adds to the ingredients to be dealt with in designing school facilities.

Some other limitations on school design emanate from codes and statutes, some rickety with age and out-of-date or written to protect obsolete practices and procedures. Codes, like educational habits, are slow to change. Codes may be as obsolete as some educational, and architectural practices; but they can be changed.

Well-written up-dated codes are vital to safety, sanitation, and human convenience. Building laws provide the necessary safeguards, the proper framework for good order in administering public affairs, and they are proper restrictions on "total" freedom or license to design anything or to do business "any old way."

Another restraint on the designer's freedom is in the form of approval agencies and red tape. Many a state in the nation has a requirement that an agency of the state review and approve plans for school buildings. What the agency looks for depends on the state. In those states that provide building funds from state coffers, the rules and regulations may become rather specific, dealing with maximum and minimum sizes of things or with costs. Many states evaluate plans in terms of compliance with standards of sanitation and safety. If a reviewing agency becomes rigid and unyielding, it serves as a drag on progress and desirable change. It can take itself too seriously as a guardian of the public purse. But happily many state agencies are staffed with enlightened and reasonable people who exert good leadership and who try to find a middle ground between parsimony and irresponsible progressivism. They are mixed blessings, but they can serve to maintain some balance within a state in the quality of school facilities.

The budget

Another significant factor in the program is the budget. Setting the budget ought to be a mutual effort between the owner and the architect. The owner has to have enough money to pay for the project, and the architects and engineers have a duty to plan something that can be built within the budget. The budget needs to be a reasonable one.

When a school board is deliberating on the capital outlay for a new school building, there are several things it should bear in mind. First, the board is not really the client. It is the owner, and the students and other users of the school are the real client. The board member or superintendent who is oversolicitous of the taxpayers (who admittedly pay the bill), or overemphasizes the school system's debt to them, may be "short changing" the community's most important possession—its children.

Second, it probably will not cost much more in the long run to build a good, charming, well-planned, happy building than it does to build a second-rate one, though, of course, this depends on what is considered in the cost. And, since a school is built to last a while, its cost must be measured in terms of its lifetime, not just how much it cost to build. Many boards have certain fictions built into their budgets: capital outlay for buildings is rarely compared

with current expense costs for operating and maintaining buildings. As a result, the board may never know what a building really costs during its lifetime. The fiscal officer can soon find out. Maybe those inexpensive, low-cost buildings are costing entirely too much, in the long run.

When should the budget be set? Sometimes the budget is fixed in advance, because the funds--"well, that's all there is for a while anyway." But to set the budget and then to determine the project is doing things backwards, unless the project is sufficiently elastic to allow it to be cut to fit the budget.

The professional designers must have major control over at least one of three interacting factors important in any school building project:

- Program (what is to be built)
- Quality (what kinds and qualities of materials and equipment are expected)
- Budget (how much money does the owner want to spend)

If the owner wants a first-quality building on a limited budget, then the size and scope of the project have to give. If the owner wants exactly the amount of construction he says and also has an inflexible budget, then the quality must be variable. If the owner wants a first-rate building and is also precise on how much he wants, then the budget must be elastic.

Besides knowing how much the school officials are willing and able to spend, the architect must be clear on what the budget includes. (For more on this matter, see the next section of this study.) Does it just buy the building and the fastened-down equipment only, or does it include any or all of these: the design fees, all furniture, the land, site development (parking, driveways, planting, athletic fields, water supply, waste disposal)? Is the budget absolutely inflexible, or if costs should rise dramatically before the plans are complete, will the owners stick with the project and come up with more money? Of course, any reasonably predictable cost-of-construction increase should be considered in the initial budget.

Setting the budget does not end it. During the process of plan preparation, at various stages, the architect will prepare estimates of probable construction cost. These estimates will then be compared with the budget to see how things seem to be going before bids from interested contractors are finally obtained.

What the Architect Does

So far the school system has selected the architect, hopefully prepared good educational specifications, and presumably decided on the site for the school, though a study of prospective sites is one of the special or additional services the architect may provide (for additional compensation). Now a review of the services of the architect and a look at the responsibilities of the owner are appropriate.

It has already been stated that a carefully prepared agreement is necessary and that both parties should read the agreement carefully before signing. One of the many documents and forms prepared by the American Institute of Architects is AIA Document B131 "Standard Form of Agreement between Owner and Architect on a basis of a Percentage of Construction Cost," September 1966 Edition, which is reproduced in the appendix of this study (see pp. 51-58). This chapter utilizes and leans heavily on this form, interpreting the architect's services and the owner's responsibilities.

Carefully worded in appropriate legal language, this form outlines in great detail the relationships that are established between the owner and the architect. Since this form is intended for a great variety of situations—small buildings, large ones, public work, private buildings—it is naturally written in somewhat generalized language. It will not be satisfactory in all respects for every situation, nor is it intended to be. For that reason, space is provided on the form to accommodate all the special characteristics of a particular project. The document form gives structure to the agreement between the owner and the architect, and it covers most of the matters that the two parties will want to have a clear understanding about. The document form is also, of course, a reflection of current practices.

After naming the parties of the agreement, and stating the name and nature of the project, the form provides room for spelling out the fees to be paid to the architect for his services. Then the document has several pages that describe the services to which the architect is committing himself. It states the Basic Services that come for the Basic Fee rate; that is followed by a list of Additional

Services for which extra pay arrangements need to be made. It also includes concise information about the owner's responsibilities. Since this study is addressed to educators rather than architects, it may be appropriate to discuss the owner's responsibilities first.

Owner's part

Since this arrangement between owner and architect is a two-way deal, the owner has some responsibilities. These are spelled out in Article 2 (see p. 55).

A matter of business that is sometimes misunderstood has to do with information about the building site. The owner, not the architect, is obligated to furnish accurate and detailed information about the site—topography, boundaries, roads and streets, existing buildings, utility lines, trees. When information is needed, and it usually is, about what is under the ground—water, rock, soft earth, sand, or what not--the owner furnishes the services of special engineers and the needed tests. The fairness of this arrangement can be seen by considering two possible examples: (1) a school board in the mountains of Carolina has a 100-acre site with rocks, hills, and many trees and wants to start with a small school costing $200,000; (2) a school board in the Great Plains has a 40-acre flat even site without a tree, and plans to build a $4,000,000 high school. Now it would not be reasonable for architects of both these projects to pay for this site survey, out of their fee. That is the point—the cost of gathering information about the site has no direct relationship whatever to the cost of the project, while the architect's fee generally does.

The architect is entitled to expect this information to be accurate, and the owner should retain only highly competent survey and soils engineers and testing services. Inaccuracies are likely to cause trouble and extra costs. Also the owner should make sure that this special information and service is provided promptly so that no unnecessary delays result.

If necessary, the owner should designate a representative authorized to act in his behalf. The owner or his representative must accept documents submitted by the architect, make decisions, and issue approvals promptly to avoid unreasonable delays. If he becomes aware of some error or oversight in the

construction, he should immediately notify the architect—in writing. He should not himself authorize the builder to make changes or corrections.

The owner's main responsibility, however, is to provide the architect "full information regarding the requirements of his Project." That brief statement from the agreement form makes the communications business sound far more simple than it actually is.

When the school officials deliver to their design professionals a big book entitled "Educational Specifications," it will not do for them to say with a sigh, "We have done our part, now it is up to you," and then follow this with some words urging the designers to get on with the job. Ed specs are a part of the conversation, they are not a finished product—not the final word; they are not an end in themselves, they are a means to an end. Even the best of educational specifications (and many are not adequate) are only an early step in the back-and-forth dialog that needs to go on between school officials and architects throughout most of the construction project.

Basic services

AIA Document B131 lists five basic services that architects perform called "phases"—schematic design phase, design development phase, construction documents phase, bidding or negotiation phase, and construction phase. These five "phases" include the normal services for structural, mechanical, and electrical engineering. If the owner wishes, the architect can clarify for him what these normal services include.

Schematic design phase. The first phase, the SCHEMATIC DESIGN PHASE, includes the programing aspects—the architect consults with the owner to learn what the project is all about and responds with his understanding of that project. How the programing was done up to this point determines largely how the process continues. If the architect had a hand in preparing the statement of building needs or description of the project, or if he was largely in control of that process, then he can proceed, with caution and patience, to suggest architectural plans for the project. If he has not participated, then he must read the ed specs carefully and discuss them with the school people. If no written document has been prepared, then the architect has the arduous job of finding out in other ways what the project is all about.

At the very beginning of this phase—and before anything but the most preliminary and fluid plans are drawn—the principals need to come to a common ground of understanding. This may not be easy. School officials and architects often speak different languages, and they are, as a rule, different kinds of people. That is one reason they are in different professions. That is not to say that architects are not interested in education; on the contrary, many architects care very much. And there are school administrators who are seriously concerned for good architecture. But there is a difference, usually—to illustrate, one would not be likely to confuse a meeting of school administrators with an architects' convention.

The architect's first response should be fluid, an effort to tune up to a clear mutual understanding. He may respond with words and sketches and conversation to make sure he clearly understands the owner's signals. He should not commit himself too quickly to a design scheme and solution, lest he fall victim to a prejudgment and preconceptions of the design; and, slightly enamored of his first idea, may find himself reluctant to backtrack after he later truly understands the owner's needs.

Architects and engineers need not swallow the ed specs whole. They should counter those items with which they do not agree. Ed specs may have included statements and instructions that really have no business there. The designers may want to quarrel a bit with the owners. It is not presumptuous for the architect, after studying the owner's statements, to conclude that the owner is not clear on what he is saying. Architects and engineers need some courage at this point and need not be too servile in attitude. The school officials do not merely direct; the architect does not do everything the owner says. "That's what the school board wants. The committee of teachers said that this is what they have to have": such apparent dictums are not strong enough to prohibit professional decisions by the architect.

The complexity of modern buildings and of their technical and mechanical services suggests, maybe demands, that engineers and other consultants have a part in making tentative decisions at this time. In recent years, an increasingly larger proportion of the cost of a school goes into mechanical and electrical equipment and installations. This development quite naturally indicates that specialists in these areas often need to be involved in this phase of planning.

Whatever the means and processes that have been used to gather, share, impart, assimilate data and thoughts about the building project, the architect then begins on the major task of arriving at the concept and the architectural and engineering answers for the project. The client will usually be happier if he understands the first product of the architect's designing brain is not necessarily "it." The board and superintendent should not become panicky if the first proposed design is completely foreign to their own concept.

But happy is the architect if his early efforts satisfy himself and the owner—and also meet the budget. The architect is obliged to satisfy all three; some architects dare to think that their first obligation is to satisfy themselves, for, if they do not, they have difficulty supporting the schematic design before the owner. Practically, the design should meet many of the criteria the owner has set, but not necessarily all of them.

If the client is woefully unhappy at the architect's efforts—and the architect accepts that another concept and school might be better—it is not too late. That is partly what the schematic design phase is for: to come to a meeting of minds. Of course, a good architect who is sure of himself and his design will not pick up his papers and head back to the drawing board just because the owner is not ecstatic over what he sees. Some good ideas take getting used to; the school board can't always trust its own judgment in design matters. Confidence in the firm it has hired comes to a test at this point.

If the architect finds that the project and the budget are out of kilter, this is the time to bring the matter up. Waiting is not likely to make it any easier to face.

The schematic design phase is part process and part product. The designer tests and records his ideas; he may supplement drawings and words with simple three dimensional scale models, which frequently are more useful than flat drawings to convey to the client what are the ideas of the architect. Architecture is not just developing floor plans and then imposing on the plans the vertical wall under a roof. Architecture deals with space in its multidimensional quality intended to provide an emotional impact as well as a utilitarian working relationship between rooms and parts of buildings. Architecture deals with the organization of space for the use of man. Building materials are largely a means of architecture. Architecture is more than drawing plans.

When finally the schematic design documents—drawings, sketches, words, models, or whatever—are found satisfactory to all who need to approve, and the budget seems right, the architects and engineers can continue to the next phase of Basic Services.

Design development phase. Next comes the DESIGN DEVELOPMENT PHASE, as AIA Document B131 names it. From the approved Schematic Design Documents, the architect prepares documents that display all the major decisions about floor plans, about the structural system (what holds the building up and together and may give it form), about mechanical and electrical installations (what provides heat, cold, water, gas, light, communications), about equipment and services, and about building materials. Naturally the form and the appearance of the project are also settled during this phase.

How much of the planning for the entire site takes place is decided by the agreement the owner and the architect have. Certainly no one can design the buildings yet ignore or disregard the site, but the extent of the planning for the entire site is best cleared up at the start of the project. These matters may not all be included in the basic services. Yet during this phase the appropriate decisions regarding the development of the school site are also settled. Professional landscape architects are probably needed.

If all the basic decisions on these matters are made and approved at this time, the next phase will go much more smoothly. Because so many decisions are made, the architect and engineers are in a better position to make more accurate estimates of probable costs, and this they should do again at this time.

After these documents have been approved by the owner, the architect feels justified in asking for extra compensation if the owner seeks to make changes. Consequently, the school officials should take the necessary time and effort to review these Design Development documents thoroughly.

Construction documents phase. The third phase comes next: the CONSTRUCTION DOCUMENTS PHASE. In this country, especially in public works, the prevailing pattern in the building industry holds that the architect is independent from the contractor who does the actual construction. The architect is the agent of the owner. The working drawings and the specifications describe the building project in detail and instruct the builders what to do and how to do it.

The drawings and the words complement each other; what can be presented best in drawings in put there, what best is said in words is written in the specifications.

Generally, the drawings show "what, where, and how much"; the specifications tell "how." The specifications describe carefully the materials to be used and how they are to be installed. There are words on the drawings, of course, and there may be some drawings in the "specifications" book. Although architects have some individual habits and peculiarities in doing this, usually in the interest of all those connected with the building industry, some consistency has been achieved so that everyone concernedhas a good idea where to look for information.

Plans and specifications are exceedingly complex and are getting more so. For example, the drawings probably show floor plans several times, each time with different but coordinated information on them. One set of plans may show the floor layout, walls, windows, doors and other openings, dimensions, location of plumbing fixtures and other equipment. Another set of floor plans may show the structural system; another set the mechanical (ducts, pipes, heating and cooling equipment, pumps, fans and all that), a third set may show the electrical wiring, switching, lighting, power outlets, transformers, communications systems; and on and on. And a fourth set of plans may indicate all plumbing services and fixtures and equipment. There may be others sets to show equipment layouts. The drawings may have to be organized partly on the basis of who is going to use them.

The working drawings have illustrations showing vertical slices through the buildings at selected locations and at several scales to describe how the building will go together. There are drawings showing the exteriors and some of the interiors, plus enough details and other graphic descriptions to clarify for the builders what they are to do. There may be sheets filled with "schedules," and charts with information about doors, windows, hardware, fixtures, wall finishes, floor surfaces, ceiling materials, structural materials, and so on. And everything must be coordinated—ducts shouldn't try to go through solid concrete columns, equipment should not cover up ventilation openings; drawings should not be contradicted by specifications nor by other drawings.

The process of completing construction documents takes time. If changes

are to be made at this late date, it takes even more time. What happens if the owner wants to make a change when the drawings and specifications are almost complete? Pages and pages of specifications may be affected; many sheets of drawings have to corrected or maybe even redrawn. That is why all big decisions are made during the previous DESIGN DEVELOPMENT PHASE. Ideally, the owner should not be much involved during the CONSTRUCTION DOCUMENTS PHASE, except at the end when he needs to review and approve these documents.

At this time, the architect also assembles the General Conditions of the Contract for Construction. The basis for these General Conditions is an extensive printed standard document which has been developed and refined and continues to be modified from time to time by the construction industry. It includes definitions, describes carefully the relationships and responsibilities of (and between) owner, architect, contractors, subcontractors, their rights and privileges. It is part of the contract between owner and the contractors. Since the standard printed General Conditions such as those available from the AIA are written to serve the nation's construction industry, they need to be modified or supplemented to suit each particular project by adding Supplementary Conditions.

There is also the Agreement, which is a form to be filled in and signed by the owner and the contractors after contracts are awarded. This form, plus the Conditions of the Contract (including General, Supplementary and other conditions), the drawings, the specifications, and all addenda and modifications issued prior to the execution of the contracts, comprise the Contract Documents.

Prospective bidders must be properly informed about the project, the time and place for submitting bids, how and where they can obtain copies of the contract documents, and much other detailed information. All this information is incorporated into a statement called the Bidding Requirements, which is also prepared with the help of the architect.

Before these items are released to the prospective bidders, approval of them by the owner and a variety of agencies must usually be obtained. How many of these there are depends on what and where the project is.

Since it is their building, the owners ought to be in general agreement about the plans. Now this does not mean that the board members should scrutinize

each room and each building material. That had best be left to the school staff. When the board gets too close to some of these details, it is beginning to meddle in administrative matters, and standing committees of the board with special responsibilities for building construction can easily add another disquieting element to an already complicated process. Nonetheless, the approval of the board, on the recommendation of its staff, is required.

The Contract Documents are primarily prepared for the builders, materials suppliers, and others in the building industry. Therefore, these documents are drawn and written in the conventional "language" of that industry. The owner, in order to understand what he will get and what he is approving, has to learn this language. Here again, school officials may want to rely on the judgment of the architect and engineers on many of these details, or they may have a staff with specialists competent to examine the documents carefully. Large school systems may have their own forms and their own outlines for these documents such as the invitation for bids, general conditions, or contracts. If so, professional designers and builders are obliged to use them.

Very likely more approvals will be required. Many states have requirements for approval of school building plans. This practice is well-intentioned in order to prevent serious contrasts in quality of schools within a state, to assure reasonable standards, and to assure acceptably safe and sanitary places for people.

In order to avoid embarrassment and trouble, superintendents had best find out what these state requirements are. These state approvals may need to be secured from a variety of agencies; the state educational agency; those responsible for fire, wind, and earthquake safety; health and safety agencies; highway and street departments; planning services, usually for good and sufficient reasons. But the list can become maddeningly long. The school officials may be responsible for obtaining these approvals; or, as agent for the board, the architect may be assigned this chore. No matter who does the job, securing these approvals takes time and money for trips and telephone calls, extra sets of contract documents, as well as haggling, explaining, re-explaining, and coordinating.

Local agencies may also, by law or custom, be entitled to take a view of the plans to determine if all the local requirements are being met. If so, then

time needs to be set aside for this too in the total schedule for the planning and bidding procedures.

Bidding or negotiations phase. The next phase of the architect's Basic Services, according to AIA Document B131, is the BIDDING OR NEGOTIATION PHASE. This comes after all approvals are in order, and after the latest statement of probable cost has been prepared by the architect and engineers and approved. On nonpublic work, and sometimes in the case of special public projects, contracts are occasionally "negotiated," which is a process whereby owner and contractor arrive at a mutually agreeable price without competitive bidding.

Public schools and many private institutions follow the conventional public works laws that are enacted to provide safeguards for spending public money. This means public and open bids. Private contractors in the building business are invited to state formally in writing how much money they will build something for. In this country, the company that commits itself to build the project for the least money is awarded the contract to build it, assuming the contractor is fully qualified.

The architect makes available the approved contract documents to all those contractors who are authorized and willing to bid. After a reasonable period of time for the bidders to prepare their bids, all bids received are opened in public at a publicly announced time and place. The architect usually officiates at this bid opening, makes a public report, and keeps an official tabulation of the bids received.

These sessions can be tense and suspenseful for all concerned. Each contractor listens as the bids are announced to find out if he was successfully low, but not too low. If he finds himself inordinately low, he worries: did he leave something out or make a mistake? For his part, the architect hopes his estimates were close so the project can go ahead without difficulty and his reputation as a good estimator is unsullied. In front of client and all those other people, it is embarrassing to be found missing the budget widely. The owner, finally satisfied with plans, hopes that nothing will have to be left out and that construction can proceed without delay.

It is not uncommon for bids from several building contractors to vary by

more than 10 percent—that is, the highest bid may be more than 10 percent higher than the lowest one. Now, if the contractors, who have full-time estimators, come up with such widely different answers to the question of how much the building will cost, then the architect can't expect to come in right "on the button" with his estimates. Actually, the architect ought to strive for the average bid, not necessarily the lowest bid. So there may need to be some elasticity in the project or in the budget.

Some of this elasticity can be achieved by means of "alternates." This means that a distinct, clearly defined part of the project is set apart from the rest of the bidding. This part might be a number of rooms, a change in quality of finishes or other materials, or in some of the equipment. This part is bid as a separate item, and the owner reserves the right to include or to omit this part from the contract. As an example: if the budget is $1,000,000, the "base bid" comes in low at $1,050,000; an alternate bid for a part of the project costs $75,000 and can be deducted; then a contract can be signed for $975,000, which is within the budget.

Alternate bids can be set up to be added to the base bid or subtracted therefrom. Which is preferred? Many opinions can be uncovered; maybe the added alternate has more adherents. It is hard to say.

Many contractors and architects also are not too favorable to alternates, and it is agreed by almost anyone that they should be reduced to a minimum and that those included should be clear-cut and easy to calculate. Suspicious contractors may feel that lots of alternates are put in to allow the owners to play a numbers game with the contractors and to take those alternates that will give the low bid to the owner's favorite builder. That is not really playing the game fair. If the owner and the architect would rather not deal with a particular individual builder, let them try to persuade that contractor not to bid. Then there are methods, acceptable ones, which call for contractors to be pre-qualified, on the basis of extensive information that the builders furnish about themselves.

The board need not decide then and there if, when, and how contracts will be awarded. In the Bidding Requirements, the owner allows itself some time during which bids are held open; he even reserves the right to reject any or all bids if circumstances suggest. After carefully examining all bids,

comparing them with each other and with the budget, the board, with the advice and recommendation of the architect and engineers, decides which bids it can and should accept. The legal counsel for the board, with the help of the design professionals, prepares contracts for signature by owner and builders. Then the contractors are authorized to proceed.

Construction phase. At this point in the process begins the final phase of the architect's Basic Services, the CONSTRUCTION PHASE—ADMINISTRATION OF THE CONSTRUCTION CONTRACT. The architect continues his role as agent for the school board. The agreement between owner and architect describes in some detail what the architect's services will be during this phase.

But how will the contractor know what the role and rights and responsibilities of the architect will be? The General Conditions of the contract define and state these clearly in language similar to that in the owner-architect agreement, but worded in terms of the builder.

One of the architect's major duties is to see that things go in accordance with the plans and specifications and other parts of the contract documents. The architects and engineers have instructed the contractors what to do and how to do it. It would be pleasant, but unrealistic, to assume that the builders will do, completely and accurately, just as the contracts say. Some builders would do this if left to themselves, but to make sure, the architect assumes the task of making periodic inspections. Builders have been known to overlook or disregard stipulations in their contract, and the architect should be on hand from time to time to take a look at what goes on and to see that things are done quite right. Sometimes questions arise concerning how best to carry out a certain process which was not quite clear. Then the architect and engineer can explain.

How often is such an inspection made? Many factors govern. How big is the project, how many things have to be watched, how competent and experienced is the contractor, how new and how complex are some of the construction processes, how many instructions does the builder need? Usually the architect or his inspectors are around to see the beginning or the end of a particular building operation. For example, the earth has been excavated, and concrete is about to be poured; the steel frame has been completed and is about to be covered up with fireproofing; the plumbing or electrical installations are about to be embedded

in concrete or covered by wall or floor or ceiling materials. Times and occasions such as these call for a good look—a thorough inspection—to see that no detectable errors or omissions are about to be hid from further inspections.

Inspections are not made "by appointment" but almost anytime. The sections in the documents on the subject of these inspections are very carefully worded in order to delineate clearly what these inspections imply and what responsibilities the architect does and does not assume when he makes these inspections. It would be well for owner and architect to discuss these matters early to avoid future misunderstandings. The contractor agrees to permit the architect access to the work.

On big jobs especially, the owner and the architect may decide to join in paying for extra or even full-time inspections services. And some large school systems with extensive construction programs underway may employ full-time inspectors. In this case, inspectors employed by the architect and by the school system need thoroughly to understand their separate and joint responsibilities.

The financial arrangements had best be made early and clearly, so that this part of the construction process is well and agreeably taken care of. But again the duties and responsibilities of this additional inspection personnel must be carefully worded and clearly understood. If the architect has retained consultants in the engineering, site planning, or equipping aspects of the project, the inspections of their work should also be clearly understood by all concerned.

The architect, having been responsible for preparing most of the contract documents, is logically the one to interpret them. If it happens (as it sometimes does) that some matters of construction are not fully shown or described in the documents, then the architect, consistent with the concept of the plans, will issue additional information.

A building project takes months or even years to complete; and therefore the contractor reasonably expects to get paid something from time to time before the work is all done. Usually, every month or so, the architect, on the basis of his observations of what the builders have bought and done for the project, certifies to the owner that a determined sum of money is owed the contractor on his contract. The owner pays on the basis of these certificates of payment. When

the construction is done, the architect and his consultants, in accordance with their mutual agreements make final inspections, and, when to their satisfaction and best belief they are able to certify to the "substantial completion" of the work, they authorize further payment. The sections in the owner-architect agreement and the general conditions of the contract are also written precisely and clearly to identify the responsibilities of the several parties when these certifications are furnished.

What happens if the bricklayer lays up a wall crooked where it should be straight, or the contractor puts in electrical wires that are several gauges too small or installs concrete that, when tested, does not meet specifications? The architect tells the builders to tear out materials not up to specifications and to do the job over and to do it right; he has that authority and that duty. Some of these decisions are easy; when the wire is too small, it is too small; but when is a wall just slightly out of plumb too far from being acceptable? Sometimes these judgments are difficult; it is best if the architect can establish clearly to the builders what are the standards of acceptability.

Some parts of a building, such as the reinforcing steel for concrete work, or structural steel for columns, beams and such, made-to-order cabinet work, have to be fabricated special for each job. The company fabricating these items will prepare drawings for the shop crews, and copies of these "shop drawings" are submitted to the architects and engineers for their final review and approval before work actually starts. This is done to assure "conformance with the project design concept and compliance with the contract documents." This wording in the AIA forms is again intended to keep clear the responsibilities of the parties involved in these processes.

Even when everything during the planning stages works as well as can be expected, when owner, architect, and engineer cooperate wonderfully, and when all reasonable precautions have been taken, a completely unforeseen soils condition may be revealed after construction starts, and additional footing and foundation construction is imperative. The architect and his consultants determine the changes that are required, they ask the builders for estimates of the extra cost and evaluate that cost. If they are satisfied and the owner agrees, a "change order" is prepared, and signed by owner and builder. The contract has

now been officially changed, and the construction continues at extra cost. Changes such as this, after contracts have been signed, are sometimes unavoidable, but occasionally they result from omissions in the contract documents, from changes of mind by the owner, or from some other similarly unhappy reason.

When finally the project is complete, the architect and his consultants make inspections of the work. The owner also may wish to, or be required to, inspect the project before officially accepting it. The architect's inspection needs to be made after the contractor indicates that the project has been substantially completed. It is likely that the architect will find some items that need completion and correction; he officially notifies the builders. Hopefully the items found incomplete or in need of correction will quickly be taken care of by the builder. In some cases, several inspections may be needed before the architect can issue a final certificate.

At this point, certain responsibilities change hands. The owner begins to pay for insurance, utilities, maintenance, and similar costs. It is very important that these matters are handled carefully, officially and legally, that appropriate forms are completed and signed, and that all parties understand the new situation.

When eventually the final payment is made to the contractor, the last phase of the architect's Basic Services ends. Then too the architect is fully paid.

Paying the architect

How to pay the architect? How much? The fee for the architect's services can be determined in a variety of ways, but a customary one is based on a percentage of the cost of the contracts for which the architect has prepared plans. This is not completely satisfactory. In fact, many architects consider it a most unsatisfactory one. Yet it is simple and convenient. The percentage figure varies with the customs of the region. It may be adapted to a variable scale with a larger percentage fee for smaller projects and a smaller percentage for larger projects. To avoid detrimental unprofessional competition through cutting of fees, recommended minimum fees are set up.

There are other fee arrangements. Owner and architect might agree that the fee be determined in this manner: the architect keeps accurate account of the cost of his time and that of his employees and consultants. The cost is multiplied by a factor agreed on, usually 2 to 3, to arrive at the chargeable fee to the owner. Obviously this requires careful, reliable, and accurate accounting of all time devoted to the owner's interest. Another fee arrangement might be for a fixed fee mutually agreed upon, plus strictly defined expenses of the architect. A fee on some other basis can be considered if satisfactory arrangements for services and fees can be agreed on.

It is best that there be a clear understanding about what the budget is likely to be and about the basis on which the fee for the architect will be determined. For that reason, the Owner-Architect Agreement Document B131 of the AIA includes an article that defines the Construction Cost on which the fee is based (see Article 3, p. 55).

Like the contractor, the architect likes to and needs to be paid from time to time during the progress of his work. The owner and architect can agree on any payment schedule they like; however, in many instances, an initial payment of 5 percent of the total fee is made to the architect when the agreement is signed. Thereafter payments are usually continued each month in proportion to the services rendered, so that at the end of each phase, the architect has been paid a percentage of the total fee, perhaps in accordance with the schedule shown in the agreement form (see Article 6 of AIA Document B131, p. 56).

Occasionally hassles develop between board and architect about the appropriate fee. An example: school officials, uncertain about how much the budget should be for a project and vague in telling the architect about how much money is available, authorize the architect to plan a $2 million project. Just before bids are received, after the architect has completed drawings for the $2 million project, the school board decides that only $1.7 million will be spent. Will the architect please arrange to take an alternate for the auditorium to make sure that the contracts can be let? The architect submits his statement for a design fee based on a $2 million project. After all, he spent the necessary time and money to complete plans for a building including the auditorium. That seems fair enough; the architect should be paid for the work he did in good faith.

Here is another case: the school officials said they had $1.7 million for a new school. The architect agrees; there is a clear understanding. Bids come in for $2 million. The project is cut to the $1.7 million figure. If the board has not changed the scope of the project since the project and the budget were originally agreed upon, then it should rightly expect the architect to revise plans and specifications to fit the budget and the board should pay the fee on the basis of the revised plans and specifications.

How many sets of plans or contract documents does the architect make as a part of his regular services? These sets become rather costly and the architect reasonably enough likes to minimize the quantity he provides. Here again then the owner and the architect should take time to come to an understanding on this.

The architect's special services

So far this discussion has been concerned primarily with the basic services of the architect. Architects can provide a number of other services which are not normally included in the Basic Services, and therefore may call for an additional fee. Such extra services and fees ought, of course, to be carefully discussed and agreed on before this additional work is performed. Some of the additional services might be these:

- Special analyses and studies of the owner's needs, beyond those called for in the SCHEMATIC DESIGN PHASE of the Basic Services
- Financial feasibility studies
- Planning surveys and site evaluations
- Making measured drawings of existing buildings
- Revising previously approved drawings to make changes not initiated by the architect
- Providing detailed estimates of construction costs, beyond the statements of Probable Costs called for in the Basic Services
- Furnishing additional services resulting from default of contractors or other similar events over which the architect has ro control yet involve for him significant additional time and cost

- Providing interior design and furnishing services for special selection of furnishings

Perhaps for an additional fee as suggested above, the architect can be very useful in the process of site evaluation. Landscape architects also can provide good counsel at this point. These professional designers may be able to envision uses the educators are not thinking about; they may be aware of how much space it takes to park cars, buses; they should be thinking about utilities (such as water, waste, fuel and power), about drainage, and about relationships with uses of neighboring land. If site commitments have not been made earlier, it is well to wait until the design talent has been hired so they may be used to help in the site evaluation.

The complete services of special professional site planners and landscape architects are not normally included in the architect's Basic Fee. This does not suggest that the architect ignores the site; that has already been referred to as one of the factors in the architectural programing of a school building project. But Basic Services do not mean a complete layout and detailed drawings of all site improvements, including curbs and gutters, paving, drainage, athletic fields, planting plans for trees and shrubs and grasses, school-owned water supply and waste disposal systems, outdoor lighting, lakes and pools.

There may be disagreement among professional site planners and landscape architects about their preferred relationships with the architect and the owner. Some architectural firms may include such site planning professi onals in their own organization. Frequently, however, landscape architects and site planners operate their own firms; they may then provide services to the architect or they may contract with the owner directly. If the latter be the case, then it is necessary that the two separate design firms, architect and landscape architect, be compatible and respectful of each other's rights and privileges for they both are working toward one common end—the development of an integrated and unified environment for people.

Architectural firms may be corporations—many of them are; but architects are people. And, as such, they (like school officials) have the ennobling and annoying characteristics of mankind. As human beings, architects are subject to making errors. They make mistakes, sometimes, in judgment, in

decisions, in details. They may forget things, or omit information from drawings or written specifications. Competency is not equal to perfection. The competent architect is not perfect. Good lawyers do not win all their cases, and doctors at times make errors with grave consequences.

If the architect makes a mistake, the roof may leak; and if he errs badly, the roof may fall. Even if no person is damaged in that fall, the architect and his engineers may suffer ostracism or exile. For the architect has a serious disadvantage in that his errors stand, or fall, for all to see. His failures are not hid in prisons, or buried in the ground.

But the educator should avoid a pose of self-righteousness, for he also makes mistakes and suffers failures, but his errors or failures may not be so apparent, especially if he forgets the exodus of good teachers from the schools he services; if he remains unaware of the stunted intellectual growth of thousands of pupils who have "gone through" the schools in his care; if he ignores the statistics of drop-outs, the refugees from his schools; and if he accepts no responsibilities for the neglect of a segment of his community's population who end up in the settlements of the disadvantaged.

This parade of comparisons does not excuse incompetence in architects or engineers, but it suggests an attitude of forgiveness for the occasional slip or error by the professional designer. As a professional, the architect may, of course, still be held responsible for his errors and omissions.

The completed school

The new school is by now ready for use. But two functions remain to be performed, orientation and evaluation. Both of these functions should be involved in the planning. Though they are not part of the architect's services it is well to involve him in them.

Orientation. When a new school is completed or when some significant improvements have been made in an older one, the crew of teachers, leaders, and other staff personnel should not be turned loose without some preparation for their new surroundings. If these users were involved in planning, this is no

great problem. But if the users are new to the project, then they deserve to be accorded the courtesy of an introduction to their new surroundings. This is especially important if the new school facilities are greatly different from those to which the staff has been accustomed. Turning people loose in a school which says in its design that everyone is going to be doing many things differently from his former custom is likely to cause problems for just about everybody.

A proper introduction includes explanations of the purposes and goals set forth when the building was planned; it informs the staff members about how the machinery works, how finishes should be treated, where the switches are, how the mechanical system works, when to call for help when things go wrong, or when users do not understand them. This can avoid early breakdowns and can prevent serious problems later on. This familiarization process helps overcome fears of new things, gadgets, and surroundings. This introduction can start before the building is done; it might even whet the appetite for the new people. They will look forward to their new school.

What happens when a piece of equipment goes bad during the sixth month of use? Who fixes a flaw that shows up not long after the school people move into their new building? Usually the contract requires that for a set period of time, maybe one year, the building contractor, backed up by his subcontractors and suppliers of equipment and materials, is required to make good any failures that come about during that time. Of course, the contractor cannot be held responsible for misuse or carelessness on the part of the owner after he moves in.

During this guarantee period, the architect gives such additional services as he and the owner have agreed on. Toward the end of the period, a general review of the project may be made by owner and architect. Whether these services are furnished by the architect had better be made clear at the start; it may be that these are to be paid for extra by the owner.

Evaluation. Schools are meant to be used; if they are planned well, they are planned for a purpose. Once completed, how well does the school work, how satisfactory is it, how successful is it as architecture? Much too often this evaluation is haphazard, if it is done at all. But the evaluation should be a part of the planning cycle; all those who participated in planning and building the project, should get together from time to time to see how well what they have concocted

actually serves the people. This should not be left to chance; it should be organized.

It is not always easy for these people to be objective about evaluation, especially is someone's pet idea happens to fizzle, or, worse yet, if a public disclosure of a failure will cause embarrassment. But that is life, for experience keeps a dear school. Without such candid evaluation, mistakes will continue to be made time after time; and the grumpy participant, who did not get his way when the planning was done, may never find out that somebody else's idea was better after all.

It might be a good idea to bring in some outsiders, some wise men, some competent critics who have the confidence of the local people. These visitors should naturally be informed about what the ideas were when the building was planned so that they may make the most of their evaluative judgments in terms of the goals the planners had in mind. Also, these visiting experts should know the conflicts, the limitations, and the problems faced by the planners. These objective groups, with time and talent, can be very useful to evaluate freely how well a product or material or device works, how good the school is as architecture, how successful it is as an engineering work, and what new ideas and changes might be considered in planning future schools.

What Next

To be immediately useful, this book up to this point has been written in terms of present recommended procedures for improving the design and construction of facilities for public elementary and secondary schools. With minor modifications, these procedures are useful also for other educational services; facilities for private and higher education.

School facilities have been defined and viewed in the context of the entire educational enterprise. Processes for determining the needs, the kind, scope, and type of educational facilities have been suggested. The current patterns for planning by the professionals in environmental design have been outlined. Ideas have been presented regarding the selection of architects and others in the design professions to plan educational facilities. Hopefully, helpful recommendations have been made regarding the messages from the school officials to the planners—the messages about the intent and purposes of buildings to be planned and built and the equipment and devices to be chosen and installed. The services of the architect and the responsibilities of the owner have been set forth.

It is likely that much improvement in the quality of school planning would result if these presently available procedures, as outlined in this study, were adopted and adapted. Yet a hazard exists that present-day teachers, school officials, and architects may not be thinking ahead far enough, and that, through the processes of preparing educational specifications and planning documents, they may actually be perpetuating obsolete concepts of what a school is or ought to be. Educational regulations, standards, evaluations for accreditation of schools by authorized educational bodies and agencies may serve to limit imagination, innovation, and desirable change at the same time that they prevent excessive, haphazard, anarchic, and careless disruption of successful and traditional processes and educational services.

But many changes are here, and more are on the way. Change is not necessarily progress; the words are not synonymous. Yet it might be useful in conclusion to consider some possibilities for change without assuming them to be recommendations or predictions of things to come.

The procedures outlined earlier in this book to determine educational needs, define the building project, plan, and prepare the construction documents, complete the construction, and utilize the facilities can well take three or more years. Times may be changing too rapidly to allow such time schedules.

A significant development in the technology of constructing buildings is characterized by moving more and more of the construction processes to an industrial plant that fabricates increasingly larger components to be transported to the site of the proposed buildings. Another approach may be to move an industrial plant to the construction site to perform more and more those processes formerly done by human labor.

Changes in the concept of what education is, the extension of research in the processes and activities of learning and education, the possible uses of newer media of communications and of data and information services, the still largely undetermined impact of computer technology on the lives of human beings, the explorations of new roles for schools in efforts towards solutions of urban and other social problems—all these may modify considerably the characteristics of what we now call "school."

But, while people continue to gather themselves together in organized developmental processes for human growth in centers for education, these environments for learning should serve well the physical, social, and emotional needs of people. People—that is what schools are all about.

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THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document B131

Standard Form of Agreement Between Owner and Architect

on a basis of a

PERCENTAGE OF CONSTRUCTION COST

AGREEMENT

made this day of in the year of Nineteen Hundred and

BETWEEN

the Owner, and

the Architect.

It is the intention of the Owner to

hereinafter referred to as the Project.

The Owner and the Architect agree as set forth below.

I. THE ARCHITECT shall provide professional services for the Project in accordance with the Terms and Conditions of this Agreement.

II. THE OWNER shall compensate the Architect, in accordance with the Terms and Conditions of this Agreement, as follows:

a. *FOR THE ARCHITECT'S BASIC SERVICES*, as described in Paragraph 1.1, a Basic Fee computed at the following percentages of the Construction Cost, as defined in Article 3, for portions of the Project to be awarded under

A Single Stipulated Sum Contract	per cent (%)
Separate Stipulated Sum Contracts	per cent (%)
A Single Cost Plus Fee Contract	per cent (%)
Separate Cost Plus Fee Contracts	per cent (%)

b. *FOR THE ARCHITECT'S ADDITIONAL SERVICES*, as described in Paragraph 1.3, a fee computed as follows:

Principals' time at the fixed rate of dollars ($)
per hour. For the purposes of this Agreement, the Principals are:

Employees' time computed at a multiple of ( )
times the employees' Direct Personnel Expense as defined in Article 4.

Additional services of professional consultants engaged for the normal structural, mechanical and electrical engineering services at a multiple of
( ) times the amount billed to the Architect for such additional services.

c. *FOR THE ARCHITECT'S REIMBURSABLE EXPENSES*, amounts expended as defined in Article 5.

d. *THE TIMES AND FURTHER CONDITIONS OF PAYMENT* shall be as described in Article 6.

TERMS AND CONDITIONS OF AGREEMENT BETWEEN OWNER AND ARCHITECT

ARTICLE 1

ARCHITECT'S SERVICES

1.1 BASIC SERVICES

The Architect's Basic Services consist of the five phases described below and include normal structural, mechanical and electrical engineering services.

SCHEMATIC DESIGN PHASE

1.1.1 The Architect shall consult with the Owner to ascertain the requirements of the Project and shall confirm such requirements to the Owner.

1.1.2 The Architect shall prepare Schematic Design Studies consisting of drawings and other documents illustrating the scale and relationship of Project components for approval by the Owner.

1.1.3 The Architect shall submit to the Owner a Statement of Probable Construction Cost based on current area, volume or other unit costs.

DESIGN DEVELOPMENT PHASE

1.1.4 The Architect shall prepare from the approved Schematic Design Studies, for approval by the Owner, the Design Development Documents consisting of drawings and other documents to fix and describe the size and character of the entire Project as to structural, mechanical and electrical systems, materials and such other essentials as may be appropriate.

1.1.5 The Architect shall submit to the Owner a further Statement of Probable Construction Cost.

CONSTRUCTION DOCUMENTS PHASE

1.1.6 The Architect shall prepare from the approved Design Development Documents, for approval by the Owner, Working Drawings and Specifications setting forth in detail the requirements for the construction of the entire Project including the necessary bidding information, and shall assist in the preparation of bidding forms, the Conditions of the Contract, and the form of Agreement between the Owner and the Contractor.

1.1.7 The Architect shall advise the Owner of any adjustments to previous Statements of Probable Construction Cost indicated by changes in requirements or general market conditions.

1.1.8 The Architect shall assist the Owner in filing the required documents for the approval of governmental authorities having jurisdiction over the Project.

BIDDING OR NEGOTIATION PHASE

1.1.9 The Architect, following the Owner's approval of the Construction Documents and of the latest Statement of Probable Construction Cost, shall assist the Owner in obtaining bids or negotiated proposals, and in awarding and preparing construction contracts.

CONSTRUCTION PHASE—ADMINISTRATION OF THE CONSTRUCTION CONTRACT

1.1.10 The Construction Phase will commence with the award of the Construction Contract and will terminate when final payment is made by the Owner to the Contractor.

1.1.11 The Architect shall provide Administration of the Construction Contract as set forth in Articles 1 through 14 inclusive of the General Conditions of the Contract for Construction, AIA Document A201, Tenth Edition dated September 1966, and the extent of his duties and responsibilities and the limitations of his authority as assigned thereunder shall not be modified without his written consent.

1.1.12 The Architect, as the representative of the Owner during the Construction Phase, shall advise and consult with the Owner and all of the Owner's instructions to the Contractor shall be issued through the Architect. The Architect shall have authority to act on behalf of the Owner to the extent provided in the General Conditions unless otherwise modified in writing.

1.1.13 The Architect shall at all times have access to the Work wherever it is in preparation or progress.

1.1.14 The Architect shall make periodic visits to the site to familiarize himself generally with the progress and quality of the Work and to determine in general if the Work is proceeding in accordance with the Contract Documents. On the basis of his on-site observations as an Architect, he shall endeavor to guard the Owner against defects and deficiencies in the Work of the Contractor. The Architect shall not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect shall not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and he shall not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents.

1.1.15 Based on such observations at the site and on the Contractor's Applications for Payment, the Architect shall determine the amount owing to the Contractor and shall issue Certificates for Payment in such amounts. The issuance of a Certificate for Payment shall constitute a representation by the Architect to the Owner, based on the Architect's observations at the site as provided in Subparagraph 1.1.14 and on the data comprising the Application for Payment, that the Work has progressed to the point indicated; that to the best of the Architect's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole upon Substantial Completion, to the results of any subsequent tests required by the Contract Documents, to minor

deviations from the Contract Documents correctable prior to completion, and to any specific qualifications stated in the Certificate for Payment); and that the Contractor is entitled to payment in the amount certified. By issuing a Certificate for Payment, the Architect shall not be deemed to represent that he has made any examination to ascertain how and for what purpose the Contractor has used the moneys paid on account of the Contract Sum.

1.1.16 The Architect shall be, in the first instance, the interpreter of the requirements of the Contract Documents and the impartial judge of the performance thereunder by both the Owner and Contractor. The Architect shall make decisions on all claims of the Owner or Contractor relating to the execution and progress of the Work and on all other matters or questions related thereto. The Architect's decisions in matters relating to artistic effect shall be final if consistent with the intent of the Contract Documents.

1.1.17 The Architect shall have authority to reject Work which does not conform to the Contract Documents. The Architect shall also have authority to require the Contractor to stop the Work whenever in his reasonable opinion it may be necessary for the proper performance of the Contract. The Architect shall not be liable to the Owner for the consequences of any decision made by him in good faith either to exercise or not to exercise his authority to stop the Work.

1.1.18 The Architect shall review and approve shop drawings, samples, and other submissions of the Contractor only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents.

1.1.19 The Architect shall prepare Change Orders.

1.1.20 The Architect shall conduct inspections to determine the Dates of Substantial Completion and Final Completion, shall receive written guarantees and related documents assembled by the Contractor, and shall issue a final Certificate for Payment.

1.1.21 The Architect shall not be responsible for the acts or omissions of the Contractor, or any Subcontractors, or any of the Contractor's or Subcontractors' agents or employees, or any other persons performing any of the Work.

1.2 PROJECT REPRESENTATION BEYOND BASIC SERVICES

1.2.1 If more extensive representation at the site than is described under Subparagraphs 1.1.10 through 1.1.21 inclusive is required, and if the Owner and Architect agree, the Architect shall provide one or more Full-time Project Representatives to assist the Architect.

1.2.2 Such Full-time Project Representatives shall be selected, employed and directed by the Architect, and the Architect shall be compensated therefor as mutually agreed between the Owner and the Architect as set forth in an exhibit appended to this Agreement.

1.2.3 The duties, responsibilities and limitations of authority of such Full-time Project Representatives shall be set forth in an exhibit appended to this Agreement.

1.2.4 Through the on-site observations by Full-time Project Representatives of the Work in progress, the Architect shall endeavor to provide further protection for the Owner against defects in the Work, but the furnishing of such project representation shall not make the Architect responsible for the Contractor's failure to perform the Work in accordance with the Contract Documents.

1.3 ADDITIONAL SERVICES

The following services are not covered in Paragraphs 1.1 or 1.2. If any of these Additional Services are authorized by the Owner, they shall be paid for by the Owner as hereinbefore provided.

1.3.1 Providing special analyses of the Owner's needs, and programming the requirements of the Project.

1.3.2 Providing financial feasibility or other special studies.

1.3.3 Providing planning surveys, site evaluations, or comparative studies of prospective sites.

1.3.4 Making measured drawings of existing construction when required for planning additions or alterations thereto.

1.3.5 Revising previously approved Drawings, Specifications or other documents to accomplish changes not initiated by the Architect.

1.3.6 Preparing Change Orders and supporting data where the change in the Basic Fee resulting from the adjusted Contract Sum is not commensurate with the Architect's services required.

1.3.7 Preparing documents for alternate bids requested by the Owner.

1.3.8 Providing Detailed Estimates of Construction Costs.

1.3.9 Providing consultation concerning replacement of any Work damaged by fire or other cause during construction, and furnishing professional services of the type set forth in Paragraph 1.1 as may be required in connection with the replacement of such Work.

1.3.10 Providing professional services made necessary by the default of the Contractor in the performance of the Construction Contract.

1.3.11 Providing Contract Administration and observation of construction after the Contract Time has been exceeded by more than twenty per cent through no fault of the Architect.

1.3.12 Furnishing the Owner a set of reproducible record prints of drawings showing significant changes made during the construction process, based on marked up prints, drawings and other data furnished by the Contractor to the Architect.

1.3.13 Providing services after final payment to the Contractor.

1.3.14 Providing interior design and other services required for or in connection with the selection of furniture and furnishings.

1.3.15 Providing services as an expert witness in connection with any public hearing, arbitration proceeding, or the proceedings of a court of record.

1.3.16 Providing services for planning tenant or rental spaces.

ARTICLE 2

THE OWNER'S RESPONSIBILITIES

2.1 The Owner shall provide full information regarding his requirements for the Project.

2.2 The Owner shall designate, when necessary, a representative authorized to act in his behalf with respect to the Project. The Owner or his representative shall examine documents submitted by the Architect and shall render decisions pertaining thereto promptly, to avoid unreasonable delay in the progress of the Architect's work.

2.3 The Owner shall furnish a certified land survey of the site giving, as applicable, grades and lines of streets, alleys, pavements and adjoining property; rights of way, restrictions, easements, encroachments, zoning, deed restrictions, boundaries and contours of the site; locations, dimensions and complete data pertaining to existing buildings, other improvements and trees; and full information concerning available service and utility lines both public and private.

2.4 The Owner shall furnish the services of a soils engineer, when such services are deemed necessary by the Architect, including reports, test borings, test pits, soil bearing values and other necessary operations for determining subsoil conditions.

2.5 The Owner shall furnish structural, mechanical, chemical and other laboratory tests, inspections and reports as required by law or the Contract Documents.

2.6 The Owner shall furnish such legal, accounting and insurance counselling services as may be necessary for the Project, and such auditing services as he may require to ascertain how or for what purposes the Contractor has used the moneys paid to him under the Construction Contract.

2.7 The services, information, surveys and reports required by Paragraphs 2.3 through 2.6 inclusive shall be furnished at the Owner's expense, and the Architect shall be entitled to rely upon the accuracy thereof.

2.8 If the Owner observes or otherwise becomes aware of any fault or defect in the Project or non-conformance with the Contract Documents, he shall give prompt written notice thereof to the Architect.

2.9 The Owner shall furnish information required of him as expeditiously as necessary for the orderly progress of the Work.

ARTICLE 3

CONSTRUCTION COST

3.1 Construction Cost to be used as a basis for determining the Architect's Fee for all Work designed or specified by the Architect, including labor, materials, equipment and furnishings, shall be determined as follows, with precedence in the order listed:

3.1.1 For completed construction, the total cost of all such Work;

3.1.2 For work not constructed, the lowest bona fide bid received from a qualified bidder for any or all of such work; or

3.1.3 For work for which bids are not received, (1) the latest Detailed Cost Estimate, or (2) the Architect's latest Statement of Probable Construction Cost.

3.2 Construction Cost does not include the fees of the Architect and consultants, the cost of the land, rights-of-way, or other costs which are the responsibility of the Owner as provided in Paragraphs 2.3 through 2.6 inclusive.

3.3 Labor furnished by the Owner for the Project shall be included in the Construction Cost at current market rates. Materials and equipment furnished by the Owner shall be included at current market prices, except that used materials and equipment shall be included as if purchased new for the Project.

3.4 Statements of Probable Construction Cost and Detailed Cost Estimates prepared by the Architect represent his best judgment as a design professional familiar with the construction industry. It is recognized, however, that neither the Architect nor the Owner has any control over the cost of labor, materials or equipment, over the contractors' methods of determining bid prices, or over competitive bidding or market conditions. Accordingly, the Architect cannot and does not guarantee that bids will not vary from any Statement of Probable Construction Cost or other cost estimate prepared by him.

3.5 When a fixed limit of Construction Cost is established as a condition of this Agreement, it shall include a bidding contingency of ten per cent unless another amount is agreed upon in writing. When such a fixed limit is established, the Architect shall be permitted to determine what materials, equipment, component systems and types of construction are to be included in the Contract Documents, and to make reasonable adjustments in the scope of the Project to bring it within the fixed limit. The Architect may also include in the Contract Documents alternate bids to adjust the Construction Cost to the fixed limit.

3.5.1 If the lowest bona fide bid, the Detailed Cost Estimate or the Statement of Probable Construction Cost exceeds such fixed limit of Construction Cost (including the bidding contingency) established as a condition of this Agreement, the Owner shall (1) give written approval of an increase in such fixed limit, (2) authorize rebidding the Project within a reasonable time, or (3) cooperate in revising the Project scope and quality as required to reduce the Probable Construction Cost. In the case of (3) the Architect, without additional charge, shall modify the Drawings and Specifications as necessary to bring the Construction Cost within the fixed limit. The providing of this service shall be the limit of the Architect's responsibility in this regard, and having done so, the Architect shall be entitled to his fees in accordance with this Agreement.

ARTICLE 4

DIRECT PERSONNEL EXPENSE

4.1 Direct Personnel Expense of employees engaged on the Project by the Architect includes architects, engineers, designers, job captains, draftsmen, specification writers and typists, in consultation, research and design, in producing Drawings, Specifications and other documents pertaining to the Project, and in services during construction at the site.

4.2 Direct Personnel Expense includes cost of salaries and of mandatory and customary benefits such as statutory employee benefits, insurance, sick leave, holidays and vacations, pensions and similar benefits.

ARTICLE 5

REIMBURSABLE EXPENSES

5.1 Reimbursable Expenses are in addition to the Fees for Basic and Additional Services and include actual expenditures made by the Architect, his employees, or his consultants in the interest of the Project for the following incidental expenses listed in the following Subparagraphs:

5.1.1 Expense of transportation and living when traveling in connection with the Project and for long distance calls and telegrams.

5.1.2 Expense of reproductions, postage and handling of Drawings and Specifications, excluding copies for Architect's office use and duplicate sets at each phase for the Owner's review and approval; and fees paid for securing approval of authorities having jurisdiction over the Project.

5.1.3 If authorized in advance by the Owner, the expense of overtime work requiring higher than regular rates; perspectives or models for the Owner's use; and fees of special consultants for other than the normal structural, mechanical and electrical engineering services.

ARTICLE 6

PAYMENTS TO THE ARCHITECT

6.1 Payments on account of the Architect's Basic Services shall be made as follows:

6.1.1 An initial payment of five per cent of the Basic Fee calculated upon an agreed estimated cost of the Project, payable upon execution of this Agreement, is the minimum payment under this Agreement.

6.1.2 Subsequent payments shall be made monthly in proportion to services performed to increase the compensation for Basic Services to the following percentages of the Basic Fee at the completion of each phase of the Work:

Schematic Design Phase	15%
Design Development Phase	35%
Construction Documents Phase	75%
Bidding or Negotiation Phase	80%
Construction Phase	100%

6.2 Payments for Additional Services of the Architect as defined in Paragraph 1.3, and for Reimbursable Expenses as defined in Article 5, shall be made monthly upon presentation of the Architect's statement of services rendered.

6.3 No deductions shall be made from the Architect's compensation on account of penalty, liquidated damages, or other sums withheld from payments to contractors.

6.4 If the Project is suspended for more than three months or abandoned in whole or in part, the Architect shall be paid his compensation for services performed prior to receipt of written notice from the Owner of such suspension or abandonment, together with Reimbursable Expenses then due and all terminal expenses resulting from such suspension or abandonment.

ARTICLE 7

ARCHITECT'S ACCOUNTING RECORDS

Records of the Architect's Direct Personnel, Consultant and Reimbursable Expenses pertaining to the Project, and records of accounts between the Owner and the Contractor, shall be kept on a generally recognized accounting basis and shall be available to the Owner or his authorized representative at mutually convenient times.

ARTICLE 8

TERMINATION OF AGREEMENT

This Agreement may be terminated by either party upon seven days' written notice should the other party fail substantially to perform in accordance with its terms through no fault of the other. In the event of termination due to the fault of others than the Architect, the Architect shall be paid his compensation for services performed to termination date, including Reimbursable Expenses then due and all terminal expenses.

ARTICLE 9

OWNERSHIP OF DOCUMENTS

Drawings and Specifications as instruments of service are and shall remain the property of the Architect whether the Project for which they are made is executed or not. They are not to be used by the Owner on other projects or extensions to this Project except by agreement in writing and with appropriate compensation to the Architect.

ARTICLE 10

SUCCESSORS AND ASSIGNS

The Owner and the Architect each binds himself, his partners, successors, assigns and legal representatives to the other party to this Agreement and to the partners, successors, assigns and legal representatives of such other party with respect to all covenants of this Agreement. Neither the Owner nor the Architect shall assign, sublet or transfer his interest in this Agreement without the written consent of the other.

ARTICLE 11

ARBITRATION

11.1 All claims, disputes and other matters in question arising out of, or relating to, this Agreement or the breach thereof shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining. This agreement so to arbitrate shall be specifically enforceable under the prevailing arbitration law.

11.2 Notice of the demand for arbitration shall be filed in writing with the other party to this Agreement and with the American Arbitration Association. The demand shall be made within a reasonable time after the claim, dispute or other matter in question has arisen. In no event shall the demand for arbitration be made after institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

11.3 The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.

ARTICLE 12

EXTENT OF AGREEMENT

This Agreement represents the entire and integrated agreement between the Owner and the Architect and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both Owner and Architect.

ARTICLE 13

APPLICABLE LAW

Unless otherwise specified, this Agreement shall be governed by the law of the principal place of business of the Architect.

This Agreement executed the day and year first written above.

OWNER

ARCHITECT

Architect's Registration No.